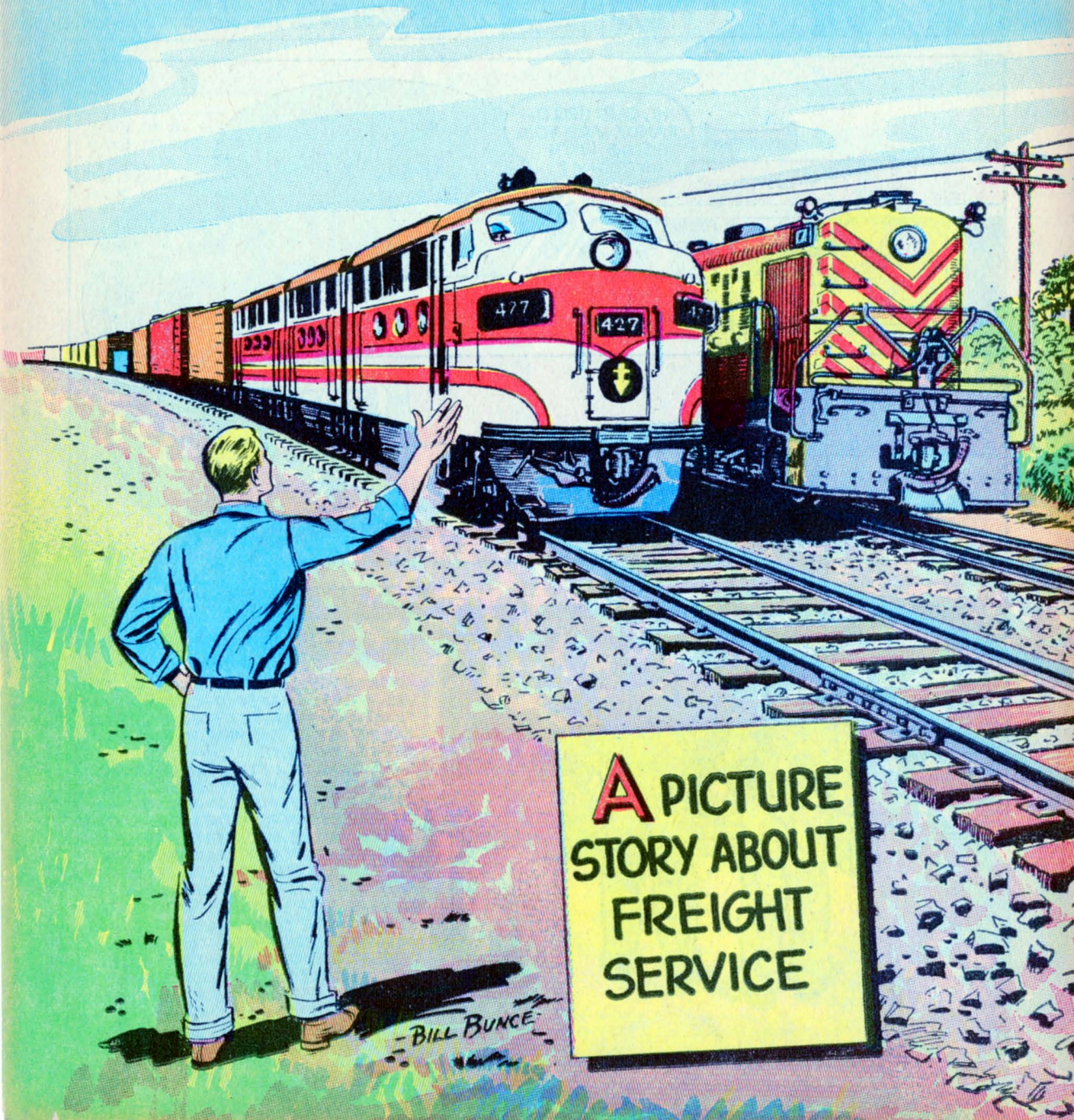
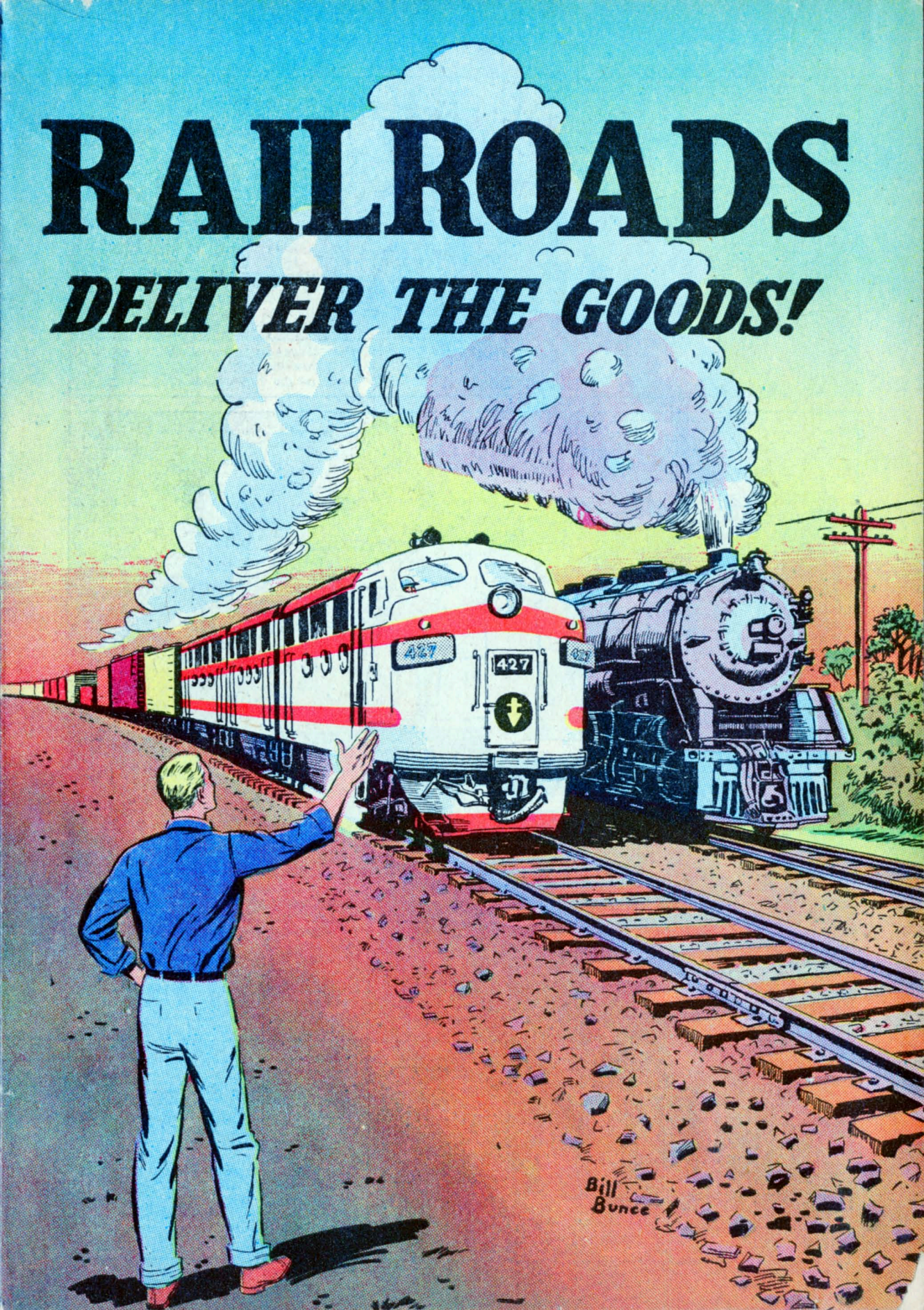
RAILROADS

DELIVER THE GOODS!



RAILROADS

DELIVER THE GOODS!



RANDY DAVIS IS STARTING OUT AS A RAILROADMAN, LEARNING TO BE A BRAKEMAN. HIS FIRST RUN IS WITH HIS FATHER, CONDUCTOR ON A FREIGHT TRAIN.

WELL, SON, YOU'VE BEEN ASSIGNED TO MY RUN TOMORROW TO BEGIN YOUR STUDENT-BRAKEMAN INSTRUCTION. YOU'LL MAKE THREE TO TEN TRIPS.

GEE, DAD, THAT'S SWELL! I'M ALL SET TO START.

WHAT HAVE WE GOT ON THE HEAD-END- STEAM OR DIESEL?

WE GET A STEAM LOCOMOTIVE TODAY — A 4-8-4. ED SMITH IS OUR ENGINEER.

EARLY NEXT MORNING IN THE RAILROAD FREIGHT YARD THEIR TRAIN—No. 70, A FAST FREIGHT—IS ALREADY MADE UP ON THE OUT-BOUND TRACK.

HI, CAP. HELLO, RANDY. ARE YOU GOING WITH US TODAY?

3127

I SURE AM, MR. SMITH. GOING TO START LEARNING THE JOB.

HELLO, ED. I'M BREAKING IN A NEW MAN.

HAULING FREIGHT IS THE RAILROADS' BIGGEST JOB. RAILROADS ARE EQUIPPED TO MOVE ANYTHING, IN ANY QUANTITY, FOR ANYBODY, IN ANY SEASON OF THE YEAR, IN ANY PART OF THE CONTINENT.

BY MEANS OF A STANDARD GAUGE (WIDTH OF TRACK) AND AN INTERCHANGE OF CARS, ANY CAR OF ANY AMERICAN RAILROAD MAY BE SENT ANYWHERE IN THE UNITED STATES, CANADA, MEXICO, AND CUBA IN A TRULY CONTINENTAL SYSTEM OF TRANSPORTATION. ALL CARS COUPLE TOGETHER, BRAKE TOGETHER, AND RUN TOGETHER. EVEN THE LADDERS, STEPS AND HAND BRAKES ARE ALWAYS IN THE SAME PLACES. THERE IS A STANDARD CODE OF OPERATING RULES.

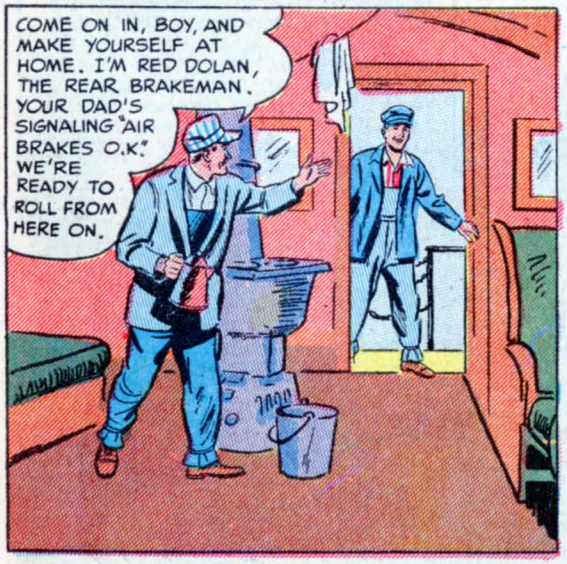
COUNTING **TONS MOVED ONE MILE**, OR **TON-MILES**, UNITED STATES RAILROADS CARRY MORE FREIGHT BETWEEN CITIES THAN ALL THE TRUCKS, ALL THE BARGES, ALL THE LAKE BOATS, ALL THE PIPELINES, AND ALL THE AIRPLANES -- MORE THAN ALL OF THEM COMBINED.

PRINTED IN U.S.A.

AFTER CONDUCTOR AND ENGINEER COMPARE WATCHES, RANDY AND HIS FATHER WALK BACK TO THE CABOOSE. CAR INSPECTORS EXAMINE THE CARS TO MAKE SURE THEY ARE IN GOOD ORDER.

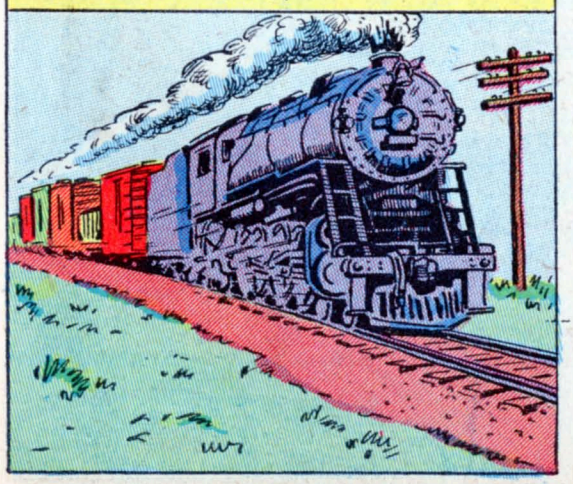
I SEE THAT THE MARKERS ARE UP ON THE CABOOSE— THAT MAKES IT A TRAIN. HOW LONG BEFORE WE START?

IN A FEW MINUTES. FIRST, I'VE GOT TO SIGNAL THE ENGINEER TO TRY THE AIR BRAKES.

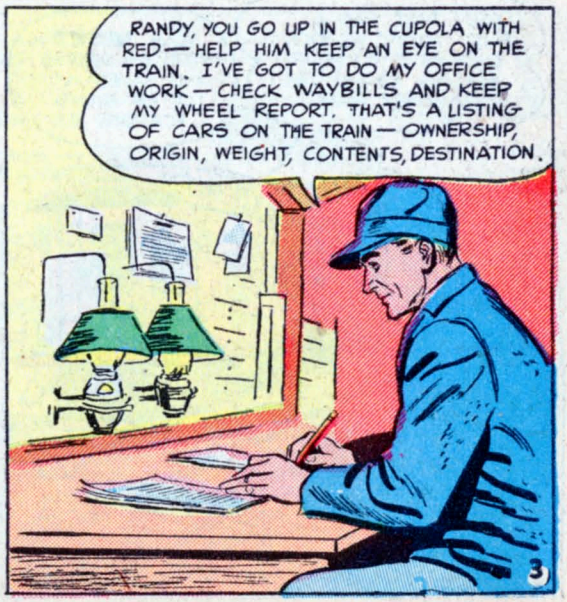


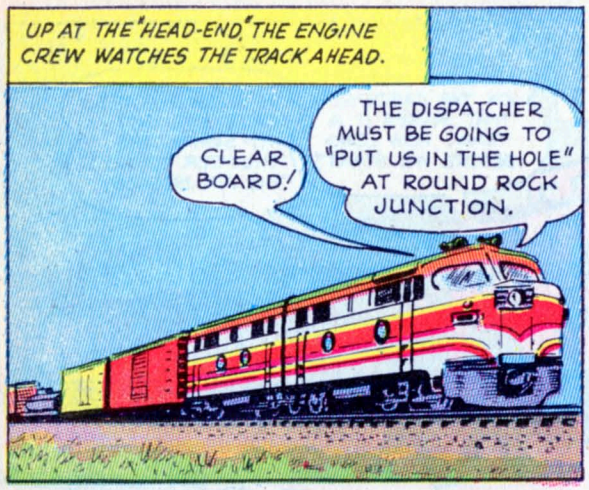
CONDUCTOR DAVIS GIVES THE ENGINEER THE "HIGHBALL." No. 70 WITH 49 LOADS AND 11 EMPTIES BEGINS TO MOVE.

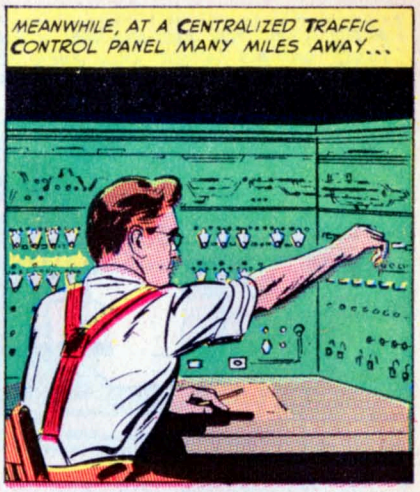
THE TRAIN GETS THE CLEAR SIGNAL AT THE YARD EXIT AND IS SOON ROLLING UP THE MAINLINE BEHIND A BIG 4-8-4 — A LOCOMOTIVE WITH 4 LEADING TRUCKWHEELS, 8 DRIVING WHEELS, AND 4 TRAILING TRUCKWHEELS.



RANDY, YOU GO UP IN THE CUPOLA WITH RED — HELP HIM KEEP AN EYE ON THE TRAIN. I'VE GOT TO DO MY OFFICE WORK — CHECK WAYBILLS AND KEEP MY WHEEL REPORT. THAT'S A LISTING OF CARS ON THE TRAIN — OWNERSHIP, ORIGIN, WEIGHT, CONTENTS, DESTINATION.

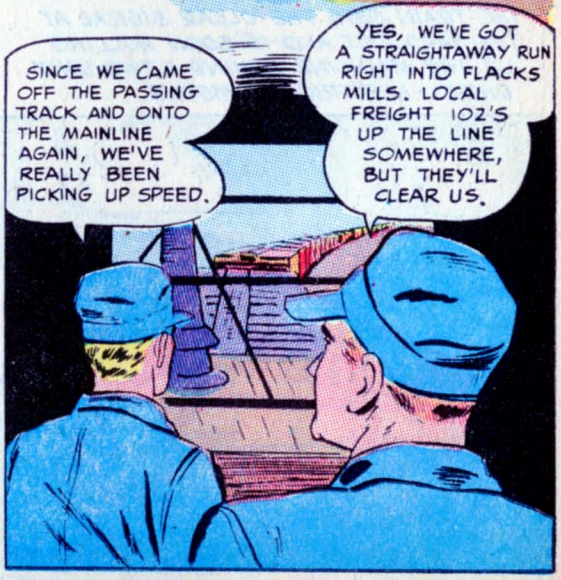


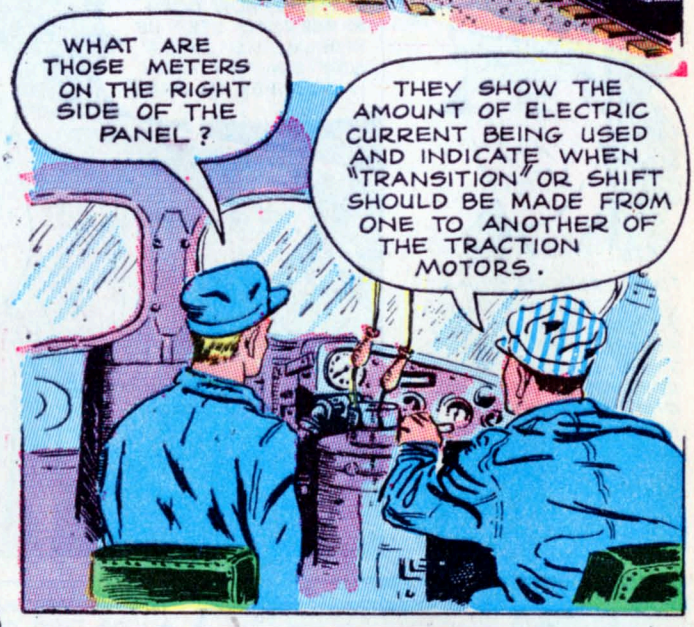

UP AT THE "HEAD-END," THE ENGINE CREW WATCHES THE TRACK AHEAD.
CLEAR BOARD!
THE DISPATCHER MUST BE GOING TO "PUT US IN THE HOLE" AT ROUND ROCK JUNCTION.


MEANWHILE, AT A CENTRALIZED TRAFFIC CONTROL PANEL MANY MILES AWAY...

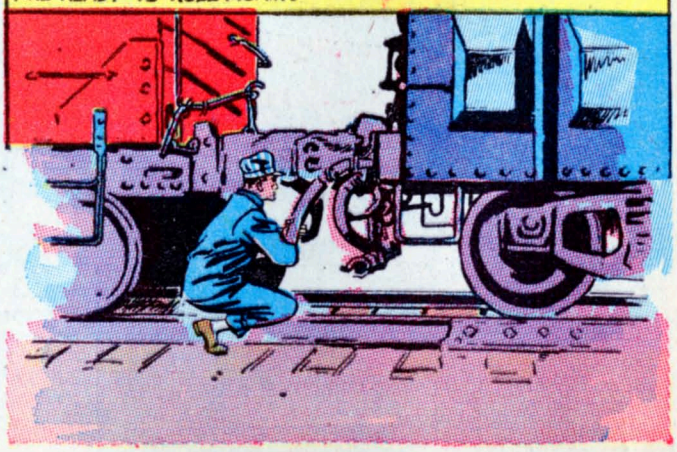
...LIGHTS ON THE BOARD INDICATE THAT NORTHBOUND No. 70 AND SOUTHBOUND No. 29 ARE APPROACHING EACH OTHER. THE DISPATCHER MOVES LITTLE LEVERS AND PUSHES BUTTONS, SETTING SIGNALS AND SWITCHES SO THAT THE NORTHBOUND TRAIN GOES ONTO A PASSING TRACK. A FEW MINUTES LATER, THE SOUTHBOUND FREIGHT ROARS BY ON THE MAINLINE TRACK.

THAT WAS A FAST "MEET." WE DIDN'T EVEN HAVE TO STOP ROLLING TO LET THE OTHER TRAIN PASS.
RIGHT. "C.T.C." REDUCES DELAYS AND SAVES A LOT OF STOPS FOR US.
657


SINCE WE CAME OFF THE PASSING TRACK AND ONTO THE MAINLINE AGAIN, WE'VE REALLY BEEN PICKING UP SPEED.
YES, WE'VE GOT A STRAIGHTAWAY RUN RIGHT INTO FLACKS MILLS. LOCAL FREIGHT 102'S UP THE LINE SOMEWHERE, BUT THEY'LL CLEAR US.



SIX CARS ARE COUPLED INTO THE TRAIN. WHILE THE HEAD BRAKEMAN CONNECTS THE AIR LINE, THE CONDUCTOR GETS THE WAYBILLS FROM THE AGENT. HE CHECKS THE CARS AND THEY ARE READY TO ROLL AGAIN.



THE CAB OF A LOCOMOTIVE CONTAINS THE CONTROLS REQUIRED IN THE OPERATION OF THE ENGINE AND TRAIN— THE THROTTLE, THE AIR BRAKE CONTROLS, THE SAND CONTROLS, AND SEVERAL GAUGES AND INDICATORS WHICH TELL THE ENGINEER HOW WELL THE LOCOMOTIVE IS PERFORMING. THE THROTTLE IS ON A CONTROL STAND TO THE LEFT OF THE ENGINEER'S SEAT (ON THE RIGHT SIDE OF THE CAB). BELOW THE THROTTLE IS THE REVERSE LEVER. ON THE INSTRUMENT PANEL IN FRONT OF THE CONTROL STAND IS THE SPEED RECORDER. THE AUTOMATIC BRAKE VALVE IS CLOSE TO THE ENGINEER'S RIGHT HAND.

NO. 70, NOW HAULING 55 LOADED CARS AND 11 EMPTIES, SPEEDS UP THE DOUBLE-TRACKED MAIN-LINE. DURING THE RUN, THE HEAD-END BRAKE-MAN RIDES IN THE ENGINE CAB TO KEEP SAFETY WATCH OVER HEAD-END CARS.
WE'LL PICK UP TRAIN ORDERS PRETTY SOON BECAUSE WE'RE LEAVING C.T.C. WE WATCH THE ORDER BOARDS AT STATIONS AND TOWERS.
LOOK AT ALL THE REFRIGERATOR CARS!
THAT'S THE RED BALL—HANDLES ALL PERISHABLES.
ANOTHER TRAIN RACES BY ON THE SOUTHBOUND TRACK—A SOLID TRAIN OF "REEFERS" (REFRIGERATOR CARS)—RUSHING FRESH MEATS, BUTTER, EGGS, FRUITS, AND VEGETABLES TO MARKET. IN A YEAR, U.S. RAILROADS HAUL MILLIONS OF TONS OF FARM PRODUCTS, ANIMALS, AND ANIMAL PRODUCTS.
720
AS NO. 70 PASSES THE NEXT STATION, THE OPERATOR "HANDS UP" ORDERS ON LARGE WOODEN HOOPS. A MEMBER OF THE ENGINE CREW CATCHES ONE HOOP..
... AND CONDUCTOR DAVIS, STANDING ON THE CABOOSE STEPS, GRABS THE SECOND HOOP "ON THE FLY."
7

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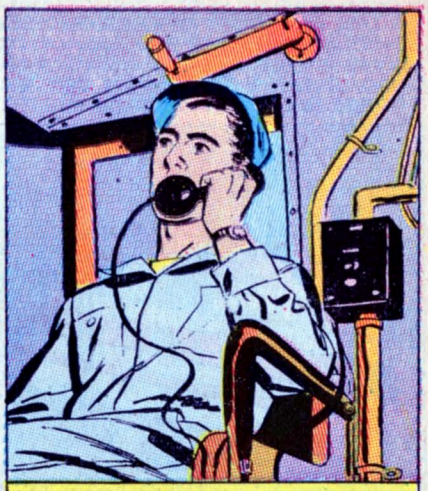
7

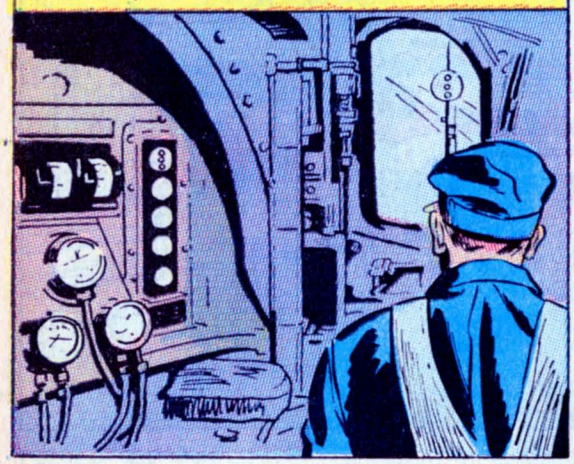
"SIGNALS AND COMMUNICATIONS ARE THE EYES AND EARS OF THE RAILROAD. MANY KINDS ARE USED — EVERYTHING FROM SIMPLE HAND, FLAG AND LANTERN SIGNALS TO AUTOMATIC ELECTRONIC CONTROL. MESSAGES ARE GIVEN BY TELEGRAPH, TELEPHONES, AND BLOCK SIGNALS."

"ON MANY RAILROADS, RADIO IS USED FOR COMMUNICATION BETWEEN MOVING TRAINS AND FIXED POINTS, AND FOR END TO END OF TRAINS, AND IN YARD SERVICE. MANY ROADS USE TWO-WAY, FREQUENCY MODULATION SPACE RADIO; OTHERS USE FIXED POINT TO TRAIN OR 'INDUCTIVE CARRIER' SYSTEM."

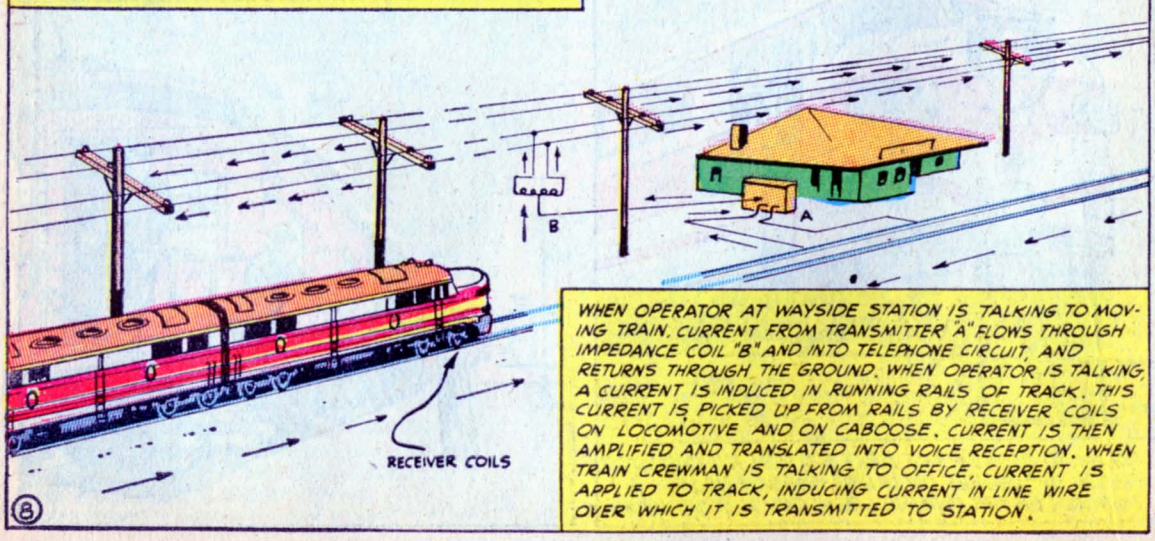


"ON THIS RAILROAD'S RADIO-EQUIPPED DIVISIONS, WE USE THE INDUCTIVE CARRIER SYSTEM FOR OVER-THE-ROAD OPERATIONS."

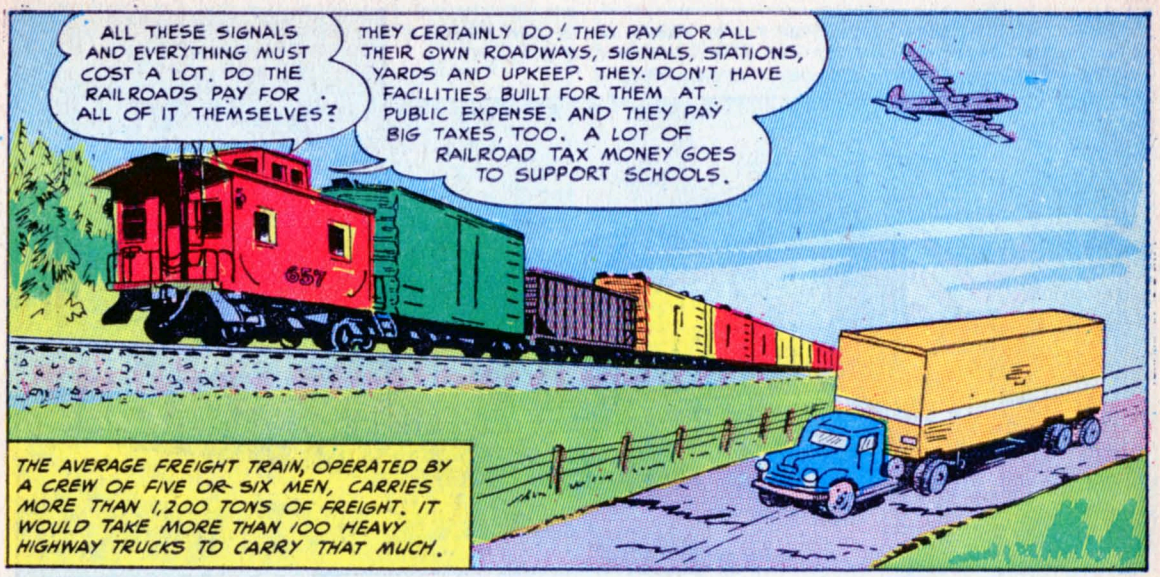
"ON SOME ROADS, SIGNAL INDICATIONS ARE REPEATED ON A PANEL INSIDE THE ENGINE CAB. THE SIGNALS, YOU KNOW, ARE GIVEN BY ELECTRIC CIRCUITS IN THE RAILS."

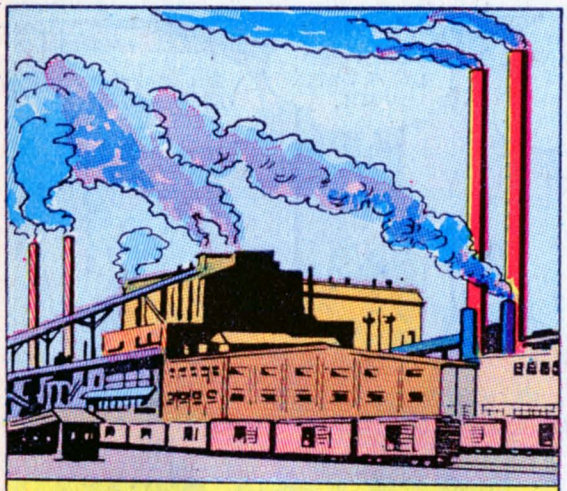


"INDUCTIVE TRAIN COMMUNICATION"— HOW IT WORKS.

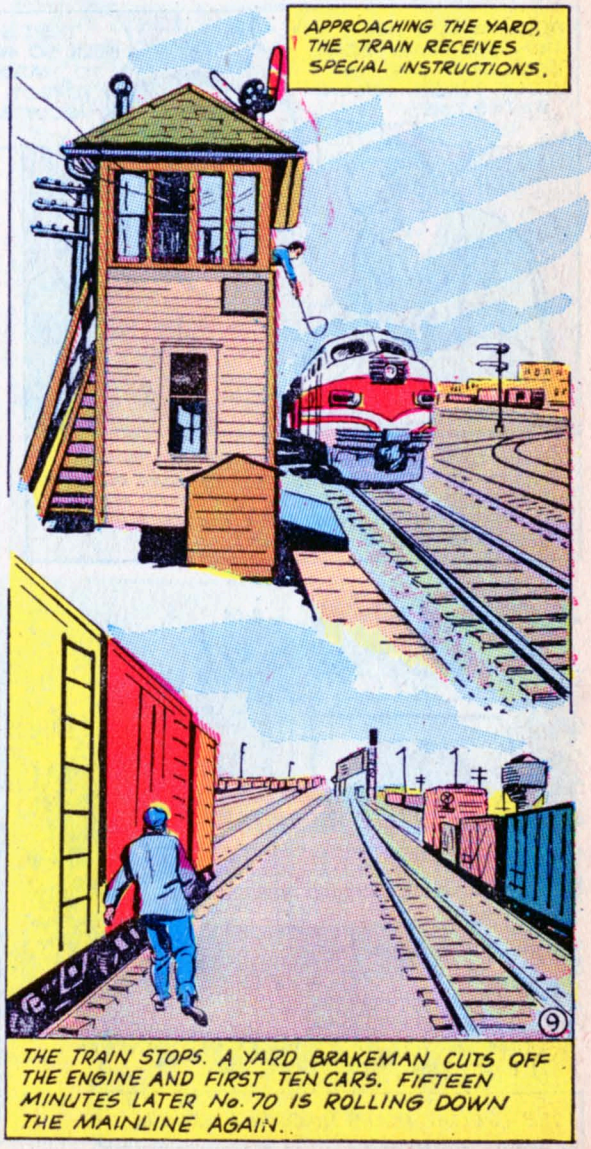


WHEN OPERATOR AT WAYSIDE STATION IS TALKING TO MOVING TRAIN, CURRENT FROM TRANSMITTER "A" FLOWS THROUGH IMPEDANCE COIL "B" AND INTO TELEPHONE CIRCUIT, AND RETURNS THROUGH THE GROUND. WHEN OPERATOR IS TALKING, A CURRENT IS INDUCED IN RUNNING RAILS OF TRACK. THIS CURRENT IS PICKED UP FROM RAILS BY RECEIVER COILS ON LOCOMOTIVE AND ON CABOOSE. CURRENT IS THEN AMPLIFIED AND TRANSLATED INTO VOICE RECEPTION. WHEN TRAIN CREWMAN IS TALKING TO OFFICE, CURRENT IS APPLIED TO TRACK, INDUCING CURRENT IN LINE WIRE OVER WHICH IT IS TRANSMITTED TO STATION.

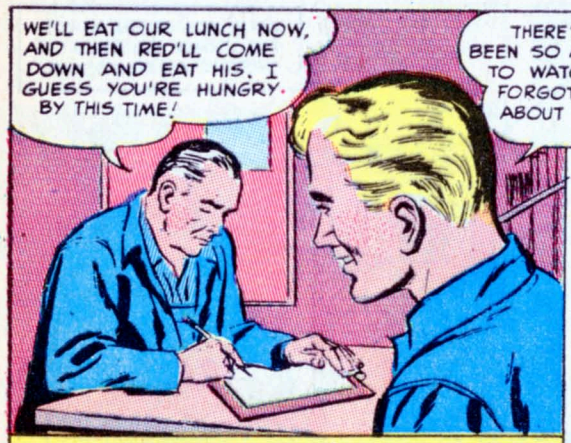

ALL THESE SIGNALS AND EVERYTHING MUST COST A LOT. DO THE RAILROADS PAY FOR ALL OF IT THEMSELVES?
THEY CERTAINLY DO! THEY PAY FOR ALL THEIR OWN ROADWAYS, SIGNALS, STATIONS, YARDS AND UPKEEP. THEY DON'T HAVE FACILITIES BUILT FOR THEM AT PUBLIC EXPENSE. AND THEY PAY BIG TAXES, TOO. A LOT OF RAILROAD TAX MONEY GOES TO SUPPORT SCHOOLS.
657
THE AVERAGE FREIGHT TRAIN, OPERATED BY A CREW OF FIVE OR SIX MEN, CARRIES MORE THAN 1,200 TONS OF FREIGHT. IT WOULD TAKE MORE THAN 100 HEAVY HIGHWAY TRUCKS TO CARRY THAT MUCH.


AS No. 70 NEARS RIVERSIDE, FACTORIES AND FREIGHT SIDINGS INCREASE ALONG THE RIGHT-OF-WAY. FREIGHT CARS CARRYING RAW MATERIALS AND FUEL ARE BEING UNLOADED; OTHER CARS ARE BEING FILLED WITH MANUFACTURED GOODS.

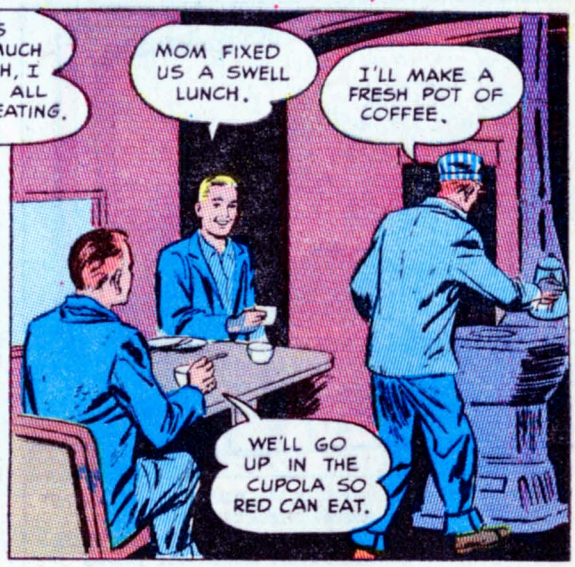
WHAT ARE WE GOING TO DO HERE IN RIVERSIDE?
ORDERS ARE TO SET OFF TEN CARS ON No. 9 TRACK. THEN WE'LL HIGHBALL AGAIN.
THE TRAIN SLOWS SPEED AND "DRIFTS" INTO RIVERSIDE, AN INTERCHANGE POINT WITH TWO OTHER RAILROADS, AND HEADS FOR THE YARDS ON THE OTHER SIDE OF THE CITY.


APPROACHING THE YARD, THE TRAIN RECEIVES SPECIAL INSTRUCTIONS.
THE TRAIN STOPS. A YARD BRAKEMAN CUTS OFF THE ENGINE AND FIRST TEN CARS. FIFTEEN MINUTES LATER No. 70 IS ROLLING DOWN THE MAINLINE AGAIN.

CONDUCTOR DAVIS SAYS, "LOOK OVER THERE, RANDY, WHERE THE WESTERN SUBDIVISION BRANCHES OFF THE MAINLINE. THAT'S ONE OF OUR DIESEL ROAD-SWITCHERS HAULING A LOCAL FREIGHT."

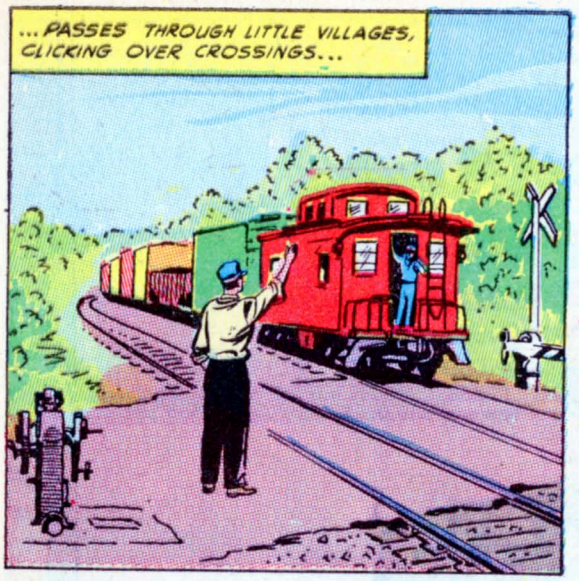


AS No. 70 SPEEDS ON BEYOND THE SUBDIVISION JUNCTION, CONDUCTOR DAVIS "BOOKS" CARS PICKED UP EN ROUTE, RETURNS TO THE CUPOLA TO WATCH HIS TRAIN, CHECKS FREQUENTLY THE ORDERS PERTAINING TO ITS MOVEMENT.

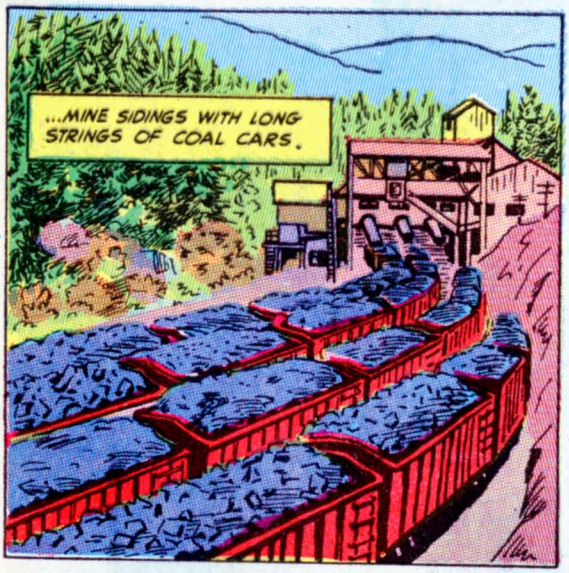


THE FREIGHT ROARS THROUGH A TUNNEL...

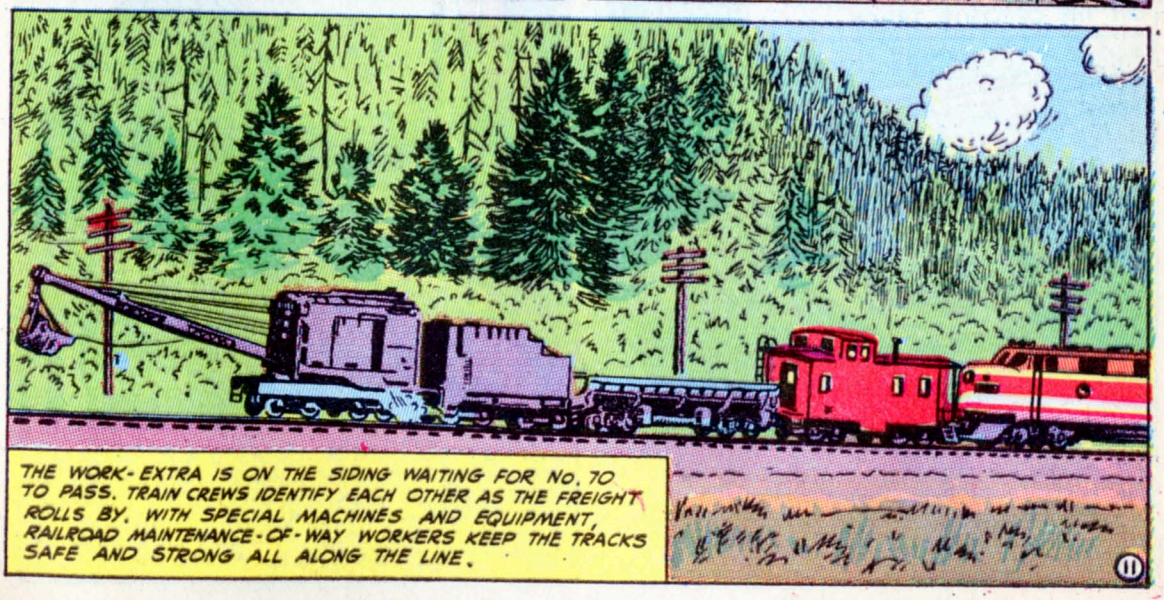
...RIDES ACROSS A HIGH STEEL BRIDGE...

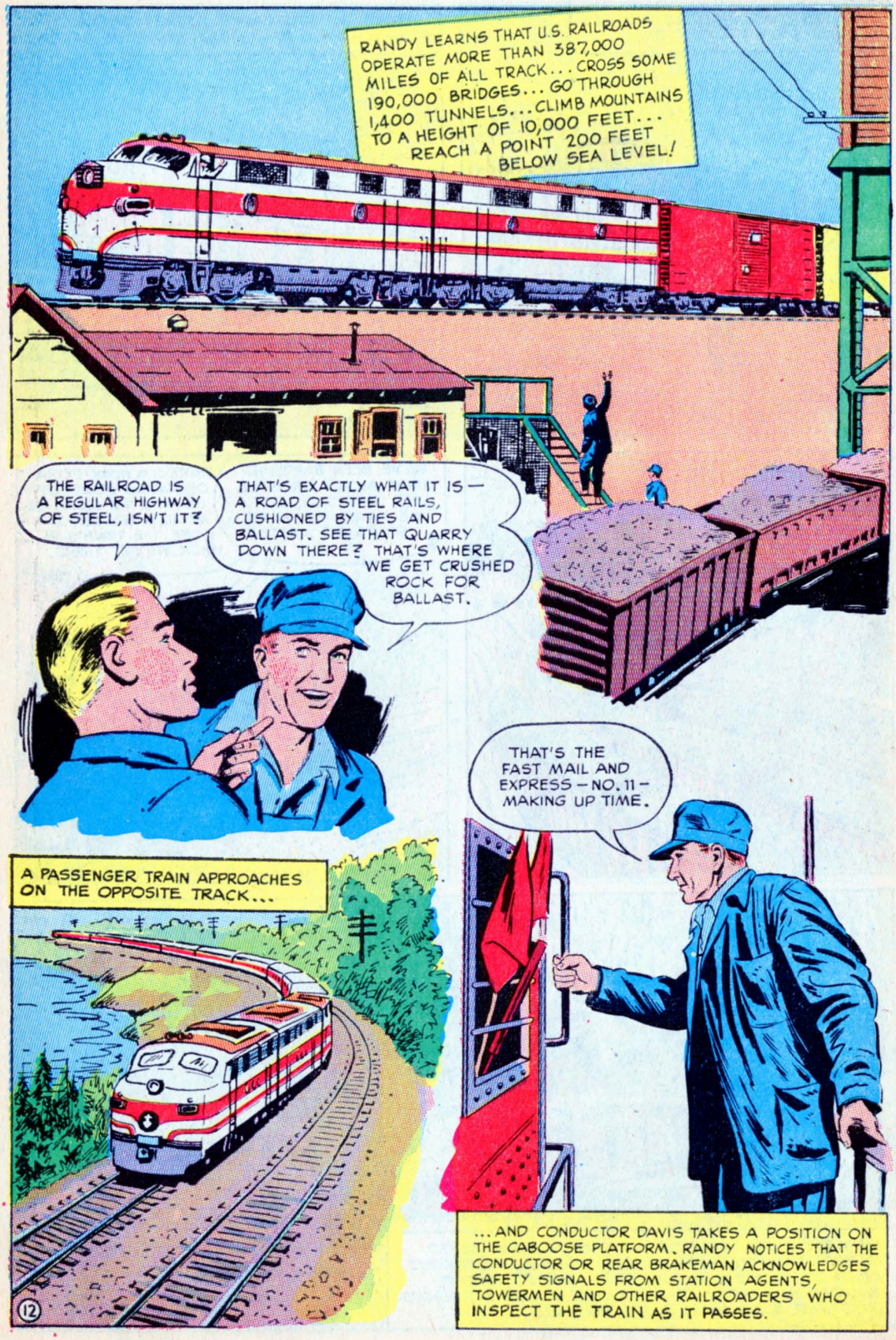

...PASSES THROUGH LITTLE VILLAGES, CLICKING OVER CROSSINGS...

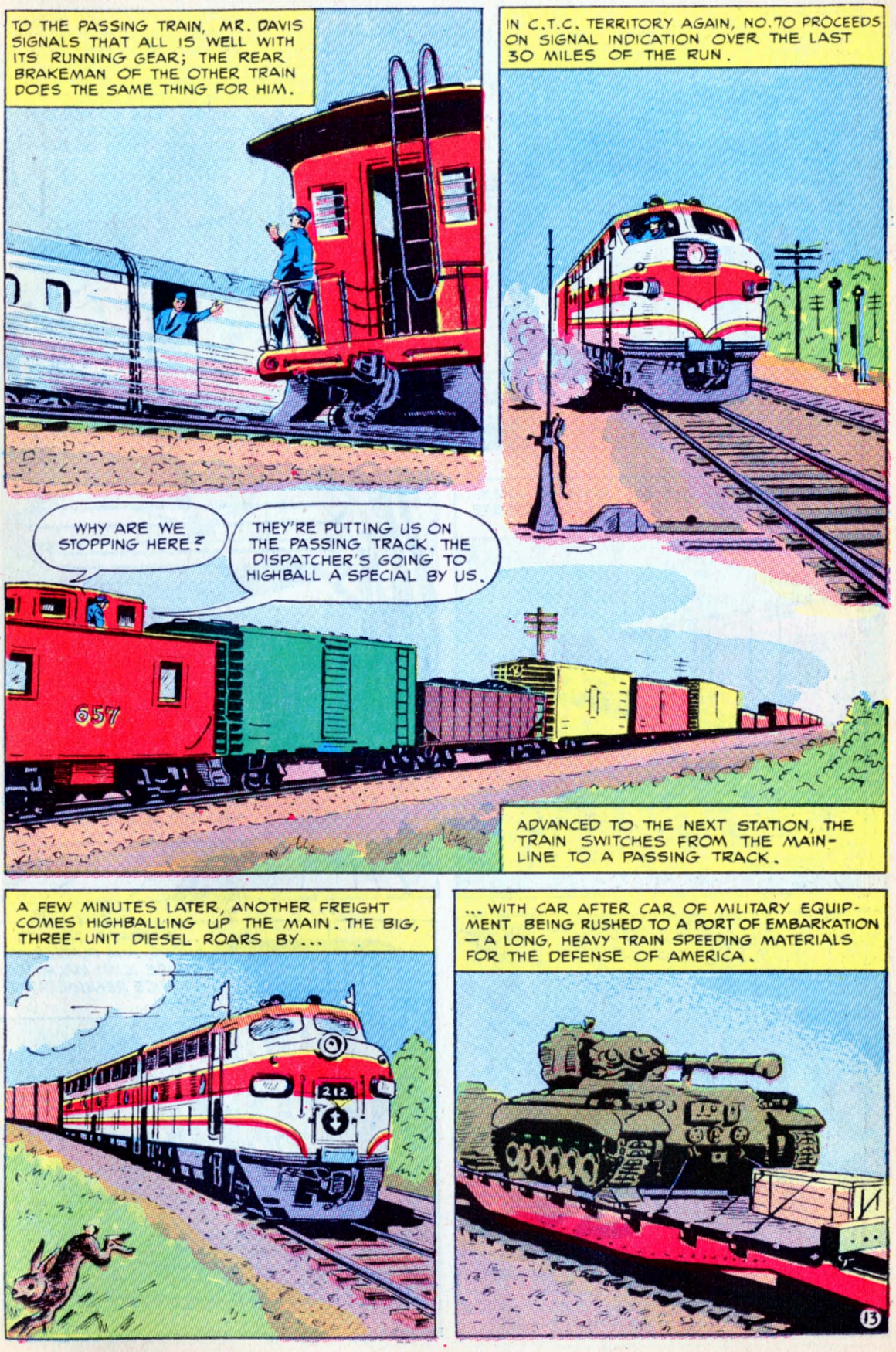
...GOES BY SIDETRACKS WHERE CARS ARE BEING LOADED WITH LUMBER AND PULPWOOD...

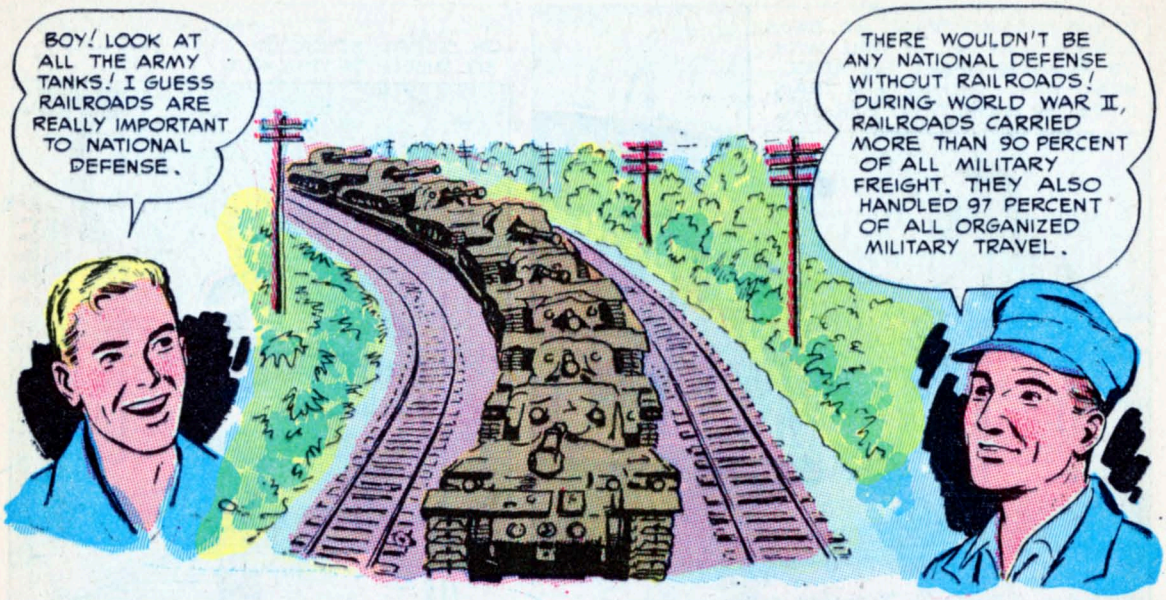

...MINE SIDINGS WITH LONG STRINGS OF COAL CARS.

WE'VE BEEN BARRELING RIGHT ALONG SINCE WE LEFT RIVERSIDE. DO WE HAVE ANY MORE STOPS OR MEETS?
THERE'S A WORK-EXTRA OPERATING NORTH OF US. IT'S TO CLEAR US AT IRON BRIDGE. I HOPE THE TRAIN'S IN WHEN WE GET THERE.

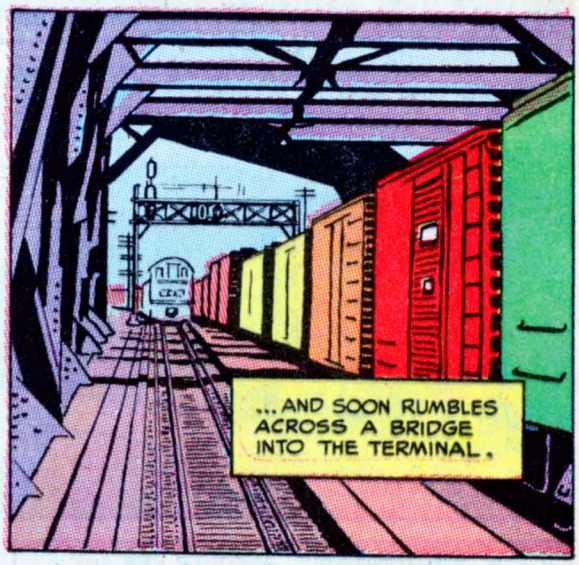

THE WORK-EXTRA IS ON THE SIDING WAITING FOR NO. 70 TO PASS. TRAIN CREWS IDENTIFY EACH OTHER AS THE FREIGHT ROLLS BY. WITH SPECIAL MACHINES AND EQUIPMENT, RAILROAD MAINTENANCE-OF-WAY WORKERS KEEP THE TRACKS SAFE AND STRONG ALL ALONG THE LINE.

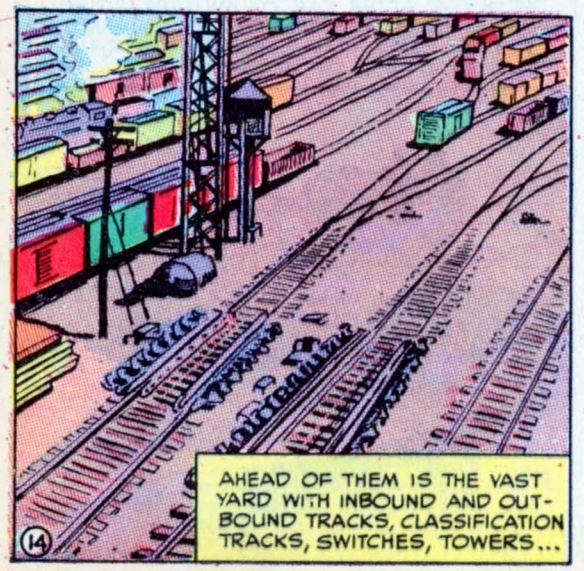

RANDY LEARNS THAT U.S. RAILROADS OPERATE MORE THAN 387,000 MILES OF ALL TRACK... CROSS SOME 190,000 BRIDGES... GO THROUGH 1,400 TUNNELS... CLIMB MOUNTAINS TO A HEIGHT OF 10,000 FEET... REACH A POINT 200 FEET BELOW SEA LEVEL!
THE RAILROAD IS A REGULAR HIGHWAY OF STEEL, ISN'T IT?
THAT'S EXACTLY WHAT IT IS — A ROAD OF STEEL RAILS, CUSHIONED BY TIES AND BALLAST. SEE THAT QUARRY DOWN THERE? THAT'S WHERE WE GET CRUSHED ROCK FOR BALLAST.
A PASSENGER TRAIN APPROACHES ON THE OPPOSITE TRACK...
THAT'S THE FAST MAIL AND EXPRESS — NO. 11 — MAKING UP TIME.
...AND CONDUCTOR DAVIS TAKES A POSITION ON THE CABOOSE PLATFORM. RANDY NOTICES THAT THE CONDUCTOR OR REAR BRAKEMAN ACKNOWLEDGES SAFETY SIGNALS FROM STATION AGENTS, TOWERMEN AND OTHER RAILROADERS WHO INSPECT THE TRAIN AS IT PASSES.

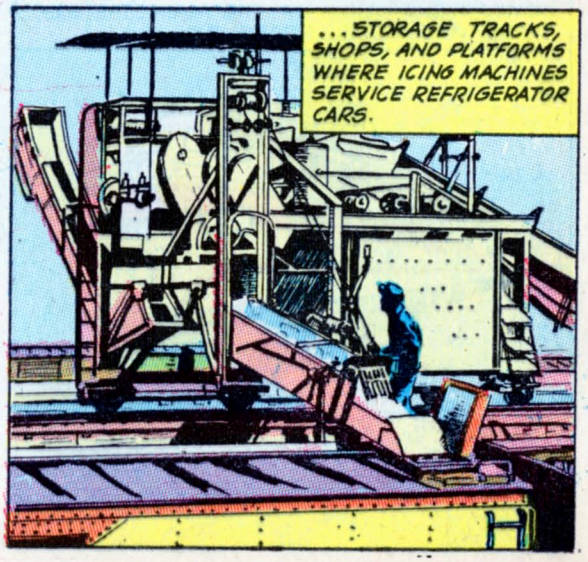

TO THE PASSING TRAIN, MR. DAVIS SIGNALS THAT ALL IS WELL WITH ITS RUNNING GEAR; THE REAR BRAKEMAN OF THE OTHER TRAIN DOES THE SAME THING FOR HIM.
IN C.T.C. TERRITORY AGAIN, NO.70 PROCEEDS ON SIGNAL INDICATION OVER THE LAST 30 MILES OF THE RUN.
WHY ARE WE STOPPING HERE?
THEY'RE PUTTING US ON THE PASSING TRACK. THE DISPATCHER'S GOING TO HIGHBALL A SPECIAL BY US.
657
ADVANCED TO THE NEXT STATION, THE TRAIN SWITCHES FROM THE MAIN-LINE TO A PASSING TRACK.
A FEW MINUTES LATER, ANOTHER FREIGHT COMES HIGHBALLING UP THE MAIN. THE BIG, THREE-UNIT DIESEL ROARS BY...
212
... WITH CAR AFTER CAR OF MILITARY EQUIPMENT BEING RUSHED TO A PORT OF EMBARKATION — A LONG, HEAVY TRAIN SPEEDING MATERIALS FOR THE DEFENSE OF AMERICA.
13

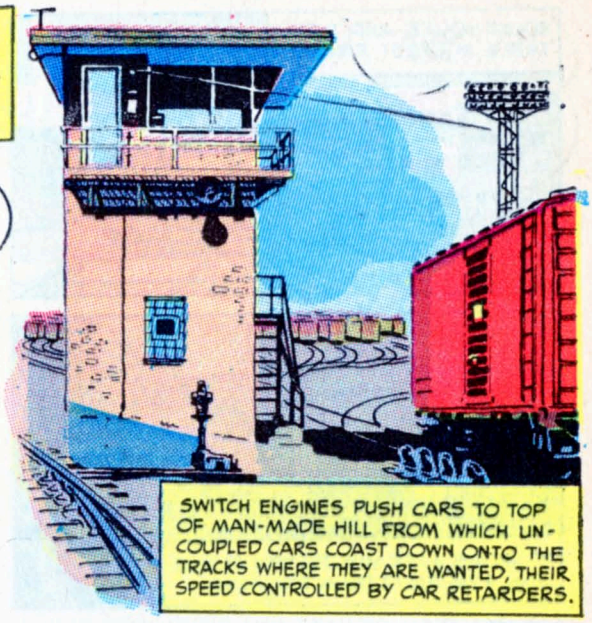

BOY! LOOK AT ALL THE ARMY TANKS! I GUESS RAILROADS ARE REALLY IMPORTANT TO NATIONAL DEFENSE.
THERE WOULDN'T BE ANY NATIONAL DEFENSE WITHOUT RAILROADS! DURING WORLD WAR II, RAILROADS CARRIED MORE THAN 90 PERCENT OF ALL MILITARY FREIGHT. THEY ALSO HANDLED 97 PERCENT OF ALL ORGANIZED MILITARY TRAVEL.

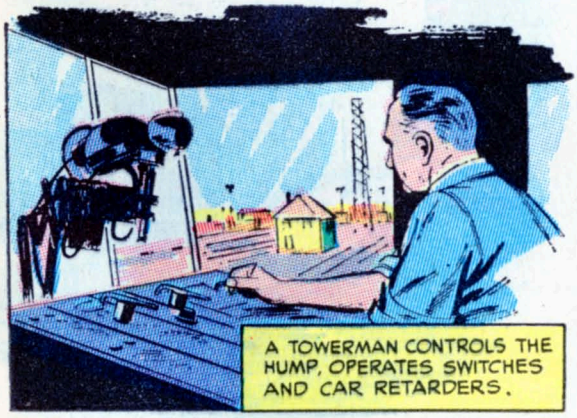
THE CABOOSE WHIZZES BY. "MARKERS OKAY!" YELLS RED, MEANING THAT IT IS A COMPLETE TRAIN. NO. 70 ROLLS AGAIN...

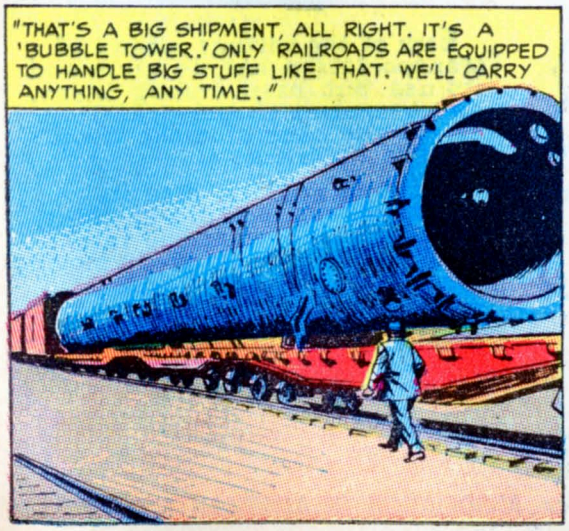

...AND SOON RUMBLES ACROSS A BRIDGE INTO THE TERMINAL.

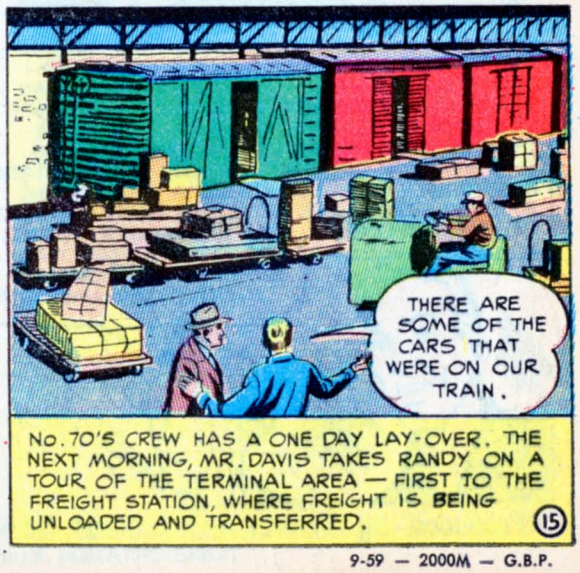

AHEAD OF THEM IS THE VAST YARD WITH INBOUND AND OUT-BOUND TRACKS, CLASSIFICATION TRACKS, SWITCHES, TOWERS...


...STORAGE TRACKS, SHOPS, AND PLATFORMS WHERE ICING MACHINES SERVICE REFRIGERATOR CARS.

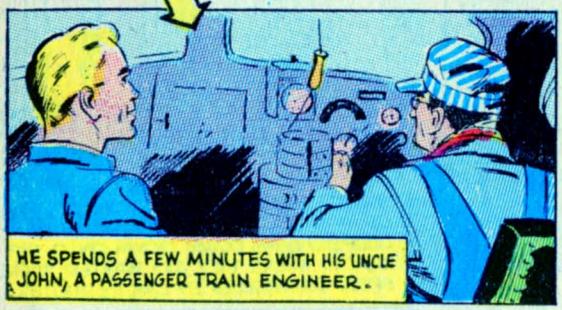


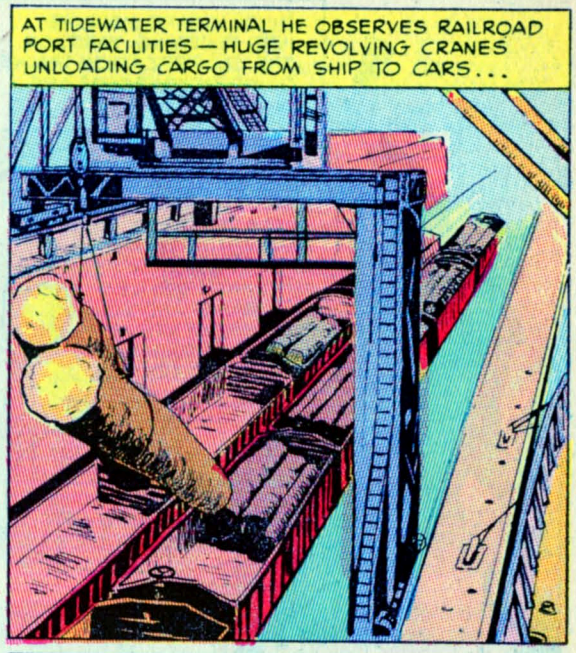






9-59 — 2000M — G.B.P.





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That's why railroads are essential to our economy in time of peace — vital to our safety in time of war.

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